costs and/or health-related quality of life. The following complications were selected: cardiovascular disease, peripheral neuropathy, renal disease, retinopathy, cataract, hypoglycemia, ketoacidosis and adverse birth outcomes. **CONCLUSIONS:** Since 2003, 281 reports of 72 studies (including many large, observational studies) have been published. These reports have substantially increased the available evidence describing complications in T1DM patients. The DCCT/EDIC studies uniquely provide long-term follow-up (now more than 23 years) of patients managed using strategies that are reasonably representative of contemporary T1DM management.

PDB20

SAFETY OF PREOPERATIVE VITAMIN D REPLACEMENT IN MILD PRIMARY HYPERPARATHYROIDISM WITH VITAMIN D DEFICIENCY: A META-ANALYSIS

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OBJECTIVES: To evaluate the safety of preoperative vitamin D replacement in mild primary hyperparathyroidism. **METHODS:** Data were searched from Medline, EMBASE, Cochrane CENTRAL and abstracts form annual scientific meetings of various international bone and mineral societies. Studies examining the effect of preoperative vitamin D replacement in patients with mild primary hyperparathyroidism (serum calcium <12 mg/dl), irrespective of year and language of the publication were included in the present meta-analysis. Data were extracted from text of the included publications or abstract of conferences. **RESULTS:** The pooled mean difference for serum calcium, phosphate, intact parathyroid hormone levels and urinary calcium excretion before and after vitamin D replacement in mild primary hyperparathyroidism were 0.06 mg/dl (95% CI, -0.11, 0.23, Z = 0.71, P = 0.48), -0.01 mg/dl (95% CI, -0.14, 0.13, Z = 0.12, P = 0.91), 17.18 pg/ml (95% CI, 1.26, 33.11, Z = 2.11, P = 0.03), -56.95 mg/24hr (-104.28, -9.62, Z = 2.36, P = 0.02)) respectively. **CONCLUSIONS:** Preoperative vitamin D replacement in subjects with mild primary hyperparathyroidism and vitamin D deficiency is safe. This meta-analysis supports the recommendation on replacement of vitamin D in subjects with primary hyperparathyroidism and vitamin D deficiency by Third international workshop on diagnosis of asymptomatic primary hyperparathyroidism.

DIABETES/ENDOCRINE DISORDERS - Cost Studies

PDB21

CHART AUDIT AND BUDGET IMPACT ANALYSIS OF PASIREOTIDE VERSUS SECOND-LINE THERAPIES IN THE TREATMENT OF CUSHING'S DISEASE IN GERMANY

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OBJECTIVES: Pasireotide is a novel, injectable multireceptor-targeted somatostatin analogue that binds with high affinity to four of the five somatostatin receptors. It has been commercially available in Europe since May 2012 and is the first pituitary-targeted medical therapy indicated for adult patients with Cushing's disease (CD) for whom surgery has failed or is not an option. This analysis aims to quantify the budget impact (BI) of utilizing pasireotide as second-line therapy in CD in Germany. **METHODS:** A thorough chart audit was conducted to analyze resource utilization and market shares of standard of care in CD. Epidemiology, treatment response complications and adverse event (AE) data were derived from published literature. Pasireotide data were taken from a Phase III clinical trial. German tariffs for each resource were then applied to an Excel-based model to compare utilization and costs with and without the introduction of pasireotide (net BI) for patients with CD over a 5-year horizon from the German health care system. **RESULTS:** Applying a CD prevalence rate of 39 per million and the treatment success of first-line therapy, fewer than 200 patients with CD are eligible for pasireotide treatment in Germany. Assuming that pasireotide in years 1–5 will have a market share of 8%, 15%, 23%, 25% and 26%, the net BI is 812,769€, 549,676€, 1,553,976€, 2,088,511€ and 2,209,948€, respectively. Budget impact is reduced by early identification of pasireotide non-responders, low cost of treating pasireotide AEs, and potential displacement of second-line surgical treatments such as bilateral adrenalectomy. Pasireotide BI may be further minimized if offsets due to lower consumption of health care resources in controlled patients are considered. **CONCLUSIONS:** The introduction of pasireotide into the German health care system will result in clinical benefits for CD patients associated with a limited and predictable BI.

PDB22

POTENTIAL BUDGET IMPACT OF LINAGLIPTIN IN FRANCE ESTIMATED FROM CURRENT PATTERN OF DIPEPTIDYL PEPTIDASE 4 INHIBITORS PRESCRIPTIONS

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OBJECTIVES: Linagliptin is a new oral hypoglycaemiant agent (OHA) from the class of dipeptidyl peptidase 4 (DPP-4) inhibitors, mostly excreted by biliary pathway, that has no contra-indication in renal impaired patients. Linagliptin in indicated for dual therapy (add on to metformin) and for triple therapy (add on to metformin and Sulfamides).". The aim of this study is to estimate the potential budget impact of linagliptin (either as mono substance or in combination with metformin) from most current DPP-4 inhibitor prescribing patterns. **METHODS:** A budget impact model was developed from a French payer perspective. The model focused on drugs and insulin administration costs. Three prescription patterns were considered for linagliptin treatment initiation: substitution without treatment intensification, substitution with treatment intensification and initiation in naïve patients. Treatment initiation data were obtained via retrospective analysis of 2011 prescribing data from the Thales database. DPP-4 inhibitors latest entrants (saxagliptin/vildagliptin-metformin combinations) were used as benchmark for linagliptin. For analysis purpose, the daily cost of linagliptin was assumed at market average (1.19€/day exfactory). **RESULTS:** Considering a virtual cohort of 10,000 patients treated with linagliptin (mono or combination with metformin), the whole treatment cost over 5 years would be 21,717 k€ compared with 18,996 k€ for a cohort of the same size treated with current alternatives. Benefits were observed among patients receiving triple therapy mainly because of competition with substitution of more expensive drugs such as GLP1 analogues and insulins. Sensitivity analysis showed that deploying the "add on to insulin indication" could reduce the budget impact up to 8 %. **CONCLUSIONS:** The estimated budget impact of linagliptin will be close to neutrality, as around 87.5 % of linagliptin costs are already offset by substitutions, based on conservative assumptions.

PDB23

ECONOMIC IMPACT OF ANALOGUE INSULIN ON HEALTH EXPENDITURE AT THE MEXICAN INSTITUTE OF SOCIAL SECURITY IN 2012. AN EXPENDITURE REDUCTION PROPOSAL

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OBJECTIVES: To measure the economic impact of insulin analogues, and its partial substitution by human insulin on the Mexican Institute of Social Security (IMSS) health expenditure **METHODS:** Considering similar efficacy in both types of insulin, a retrospective analysis on the supply department of the Administrative Directorate database, at the IMSS, was conducted. The consumed volume during 2011 was identified; all types of insulin included in the IMSS formulary were incorporated to the analysis. The information gathered was stratified by analogue and human insulin. The share in volume and monetary values was established for all insulin at the institutional market. The information was traspolated to 2012 prices. The impact on the expenditure was analyzed when analogue insulin was substituted by human insulin in 25 and 50%. Potential savings for the IMSS were obtained if analogue insulin consumption is reduced by substituting it with human insulin. An exchange rate of 14 MXN to 1 USD updated to May the 30, 2012 was considered **RESULTS:** The IMSS total expense in insulin in 2011 reached $41,281,671.26 USD, 76.3% was expend on analogue insulin whilst it only represented 19.3% of all insulin purchased in 2011. The information transpolated to 2012 prices, showed $43,208,169.84 USD or an increase by 4.6% in expenditure considering the same institutional insulin market share. Substituting 25% of the volume of analogue insulin with human insulin may lead to savings in $7,971,446.06 USD equivalent to 18.4% of the expected expenditure for 2012, meanwhile substituting 50% of the volume of analogue insulin with human insulin leads to potentials savings by $15,942,892.11 USD, equivalent to 36.9% of the expected expenditure for 2012 **CONCLUSIONS:** Substituting analogue insulin by human insulin in 50% is associated to a drop in 36.9% in the total insulin expenditure at the IMSS not affecting health outcomes in diabetic patients

PDB24

COST ANALYSIS OF ADDING PREGABALIN OR GABAPENTIN TO USUAL CARE IN THE MANAGEMENT OF COMMUNITY-TREATED PATIENTS WITH PAINFUL DIABETES PERIPHERAL NEUROPATHY IN SPAIN

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OBJECTIVES: To compare health care resources utilization and corresponding costs in adults patients with painful Diabetes Peripheral Neuropathy (pDPN) who initiated treatment with pregabalin or gabapentin as an add-on therapy to usual care in Spanish daily medical practice setting. **METHODS:** A retrospective database study was designed including systematically all medical records of adult patients, with pDPN (ICD-9-CM codes; 250.6-357.2), both gender, who were covered by the BSA health plan in years 2006-2009, and that initiated treatment with pregabalin or gabapentin as an add-on therapy for the first time. Socio-demographics, co-morbidity burden index, treatment duration, all type health care resources and days off-work due to pDPN were assessed. Societal perspective was applied in estimating costs. Comparisons of costs were adjusted by age, sex and the Charlson index of co-morbidity. **RESULTS:** A total of 395 medical records were eligible for analysis: 227 (57.5%) with pregabalin and 168 (42.5%) with gabapentin. No significant differences were observed in previous exposition to analgesics: pregabalin 2.7 (1.9) drugs; gabapentin 2.6 (1.9), $p>0.05$. However, concomitant use of analgesics was higher in gabapentin cohort; 3.9 (2.2) vs. 3.1 (2.1); $p<0.05$, mainly due to a higher utilization of non-narcotics (78.0% vs. 71.8%; $p<0.05$) and opioids (32.7% vs. 28.6%; $p<0.05$). Health care costs accounted for the 59.2% of total cost, with a mean cost per patient of €2,476. Adjusted mean (95% CI) total costs were significantly lower in patients receiving pregabalin [€2,003 (1,427-2,579)] compared with those treated with gabapentin [€3,127 (2,463-3,790)], $p=0.013$, mainly due to lower health care costs; €1,312 (1,192-1,432) versus €1,675 (1,537-1,814), respectively ($p<0.001$). Less use of concomitant analgesics, medical visits and days off-work accounted for such findings. **CONCLUSIONS:** Treatment of pDPN patients with pregabalin add-on to usual care could be a cost-saving alternative from the societal perspective when compared with gabapentin in real world settings in Spain.

PDB25

EVALUATION OF HEALTH CARE COST OF DIABETES BEFORE AND AFTER COUNSELING IN SOUTH INDIAN COMMUNITY SETUP

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OBJECTIVES: To evaluate the health care cost for the management of diabetes along with other co-morbidities condition before and after counseling. **METHODS:** A Prospective interventional study was conducted in the community setup of Warangal, India for a period of four months. Only the educated Diabetic patients with other comorbidities were enrolled in the study. The data collected were cost of medications, lab tests, consultation fee, transportation cost. The average total health care cost was calculated based on the previous two months expenses of each patient before and after counseling. **RESULTS:** A total of 100 patients were evaluated in the study period. Out of 100 patients, majorities were in the age group of 41-61 yrs 66(66%) and men 63(63%) followed by women 37(37%). Most of the patients were diabetes with hypertension, dyslipidemia. The average cost of medications per patient Rs. 1540(72.81%), the average laboratory cost per patient Rs. 350(16.55%), the average doctors consultation fee per patient Rs.175(8.27%), the average transportation charges per patient Rs.50(2.36%). The most common drugs prescribed in the study were Metformin, Glibenclamide, Gliclazide, Insulin, Ramipril, Amlodipine, Telmisartan, Metoprolol, Hydrochlorothiazide, Furosemide, Atorvastatin and Aspirin. The most common laboratory test includes FBS/PPBS/RBS/HbA1C, lipid profiles, urine analysis, Hb, Electrolytes and Sr.Creatinine. The average total health care cost for two months before and after counseling was found to be Rs.2115 and Rs.1755 per patient. **CONCLUSIONS:** In summary this is the first Indian health care cost study conducted in the community setup. Our study result shows that there is decreased cost for the management of diabetes along with other co-morbidities condition after the counseling by 17% to 18% after the two months follow up. So more prevention efforts and resources are required to reduce this burden and to provide basic diabetes care in the low- and middle-income countries.

PDB26

EFFECT OF DIABETES DISEASE MANAGEMENT PROGRAMS BASED ON BUNDLED PAYMENT ON CURATIVE HEALTH CARE COSTS IN THE NETHERLANDS

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OBJECTIVES: With the introduction of the bundled payment model in 2007, a large number of disease management programs (DMP) were initiated in the Netherlands. It is hypothesized that bundled payment will improve the quality of care en encourages tasks delegation and substitution. As result, health care costs may decrease resulting in efficiency improvement of diabetes care. **METHODS:** We analyzed insurance claim payments of 24 different insurance agencies of the Netherlands using data of Vektis. Data of 52 care groups, covering about 50% of the diabetes type 2 population were used. In total, 61,497 diabetes type 2 patients, clustered in 3078 GPs, were analyzed in a longitudinal multi-level design. For two years 32% of the patients (or their GPs) were enrolled in a DMP based on bundled payment and 21% in a DMP based on management fee whereas the patients of the control group (47%) stayed in 'care-as-usual' (CAU). **RESULTS:** Results show increasing curative health care costs of Euro 219 per patient from 2008 to 2009. While controlling for age, sex, comorbidity, and costs at baseline (average yearly costs in 2008 were Euro 4123), the average costs per patient enrolled in DMP based on bundled payment increased with Euro 288 more compared to CAU. The increase of costs of DMP based on management fee was not significant different from CAU. The increase in costs did not vary between health insurance agencies or GPs. Sensitivity analyses were conducted with a much smaller and therefore less useful 3-year data set. Substantive conclusions remained the same. **CONCLUSIONS:** Results showed an increase in curative health care costs of diabetes patients caused by DMP based on bundled payment over a period of 2 years. Further research should investigate a longer time-span to study long-term effects of DMP on costs.

PDB27

THE RELATIONSHIP BETWEEN THE PRESENCE OF METABOLIC COMPLICATIONS AND COST COMPONENTS OF TYPE 2 DIABETES MELLITUS PATIENTS IN TURKEY

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OBJECTIVES: An update of health economics analysis of type 2 diabetes mellitus (T2DM) in adult population in Turkey was performed. The primary objective of the analysis was to determine the direct cost components caused by T2DM and its complications. The relationship between metabolic complications and cost components is reported in this presentation. **METHODS:** Forty centres were selected from the list of centres in which adult T2DM patients were followed on a routine basis. These centres were representative of the country, since they were selected by two-stage cluster sampling. Medical files were reviewed for two to five years prior to the study. Item prices were obtained from the Ministry of Health and Social Security Organization of Turkey. Costs are calculated simply as the total of all frequency-price products (1€ = 2.321 Turkish Liras; Feb 2012). **RESULTS:** A total of 942 patients' data were included in the analysis. During the previous five years, 28.0% of the patients had at least one visit or hospital stay related to metabolic complications (incl. diabetic ketoacidosis, hyperglycemic hyperosmolar state, hypoglycemia) and poor glycemic control. Total annual costs were 549.46€ and 364.52€, in patients with and without metabolic complications, respectively. Costs related to treatment, laboratory tests and health care services were 270.46€, 61.49€ and 32.57€, respectively, in patients without metabolic complications. Whereas costs related to treatment, laboratory tests and health care services were significantly higher in patients with metabolic complications (383.90€, 88.93€ and 76.64€, respectively; all p-values<0.01). **CONCLUSIONS:** All components of cost increased by 35% to 135% with the presence of metabolic complications. Whatever this relationship is based on (whether a direct association between acute metabolic status and the costs or an indirect association via the relationship between metabolic control and systemic complications), better metabolic control will significantly lower the cost of management of DM.

PDB28

COST OF DISEASE AND ITS RELATIONSHIP WITH DIABETIC COMPLICATIONS IN TURKISH PATIENTS WITH TYPE 2 DIABETES MELLITUS

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OBJECTIVES: An update of health economics analysis of type 2 diabetes mellitus (T2DM) in adult population in Turkey was performed. The relationship between chronic long-term complications (i.e. cardiovascular, neurologic, ophthalmic etc) and cost components is reported in this presentation. **METHODS:** Forty centres were selected from the list of centres in which adult T2DM patients were followed on routine basis. These centres were representative of the country, since they were selected by two-stage cluster sampling. Medical files were reviewed for two to five years prior to the study. Collected data included health care utilization items (medical and surgical treatments, laboratory tests, inpatient/outpatient visits, consultations and patient education). Item prices were obtained from the Ministry of Health and Social Security Organization of Turkey (1€ = 2.3210 Turkish Liras; Feb 2012). **RESULTS:** A total of 942 patients' data were included in the analysis. In 63.7% of the patients, no visits related to any diabetic complication had been recorded, thus these patients were regarded as patients without complication. The proportions of patients with one, two and more than two complications were 25.8%, 7.9% and 2.6%, respectively. Total annual cost, which was found to be 324.27€ in patients with no systemic complication increased to 512.78€, 641.94€, 817.84€ and 1835.06€ with increasing number of systems involved (from one system to four systems). **CONCLUSIONS:** The cost of DM is strongly related with the number of systems involved by diabetic complications. Since the prevalence of DM is quite high and is further increasing, prevention and/or delay of complications will be crucial to reduce the economic burden of diabetes on the general health care budget. [Integrating the costs from this analysis and the epidemiologic data from a recently updated local study (TURDEP-II), a burden of disease model will be developed and distributed soon].

PDB29

GLYCEMIC CONTROL AND DIABETES-RELATED HEALTH CARE COSTS IN TYPE 2 DIABETES. A RETROSPECTIVE ANALYSIS BASED ON ADMINISTRATIVE AND CLINICAL DATA

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OBJECTIVES: Type 2 diabetes imposes a substantial economic burden on society. The objective of this study was to quantify the association between health care costs attributable to diabetes and level of glycemic control. **METHODS:** A retrospective analysis using a large administrative database and a clinical registry containing laboratory results was performed. Subjects, aged ≥ 45, were diagnosed for diabetes in 2008 and assigned to one of the 5 groups based upon the percentage of HbA1c values < 7% over the 2-years of follow-up after diagnosis: ≥80% (excellent-control), 79%-60% (good), 59%-40% (fair), 39%-20% (poor), <20% (very-poor). The cost attributable to oral antidiabetic drugs (OAD) and the direct cost due to hospitalizations or outpatient services for diabetes or cardiovascular disease were analyzed. Multivariate analysis was used to control for differences in potential confounding factors including age, sex, use of dyslipidemia drugs, use of hypertension drugs, previous cardiovascular disease and OAD adherence level among the study groups. **RESULTS:** Of 8,123 patients included, HbA1c control was excellent in 2,359 (29.0%) patients, good in 870 (10.7%), fair in 853 (10.5%), poor in 998 (12.3%) and very-poor in 3,043 (37,5%). Adherence to OAD was higher among suboptimal glycemic control patients (from 45.3% in the excellent-control group to 63.9% in the very-poor control group). Over 2 years, the mean diabetes-related cost was: €1,947.46 in the excellent-control group; €2,030.68 in that with a good-control; € 2,241.33 with a fair-control; € 2,489.04 with a poor-control; €2,216.75 with a very-poor-control. After adjustment, the estimated excess cost associated with good-control, fair-control, poor-control and very-poor-control group was €207.65; €381.03; €682.28; €417.81 respectively. **CONCLUSIONS:** Almost half (49.8%) patients in this study showed a sub-optimal glycemic control. This analysis indicates that the diabetes-related costs are significantly higher for individuals who have a poor glycemic control compared with those patients who have an excellent glycemic control.

PDB30

THE PATTERN AND PRESCRIPTION COST AMONG DIABETIC PATIENTS IN THE HO MUNICIPAL HOSPITAL, VOLTA REGION, GHANA

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OBJECTIVES: This study explored the pattern and cost of medicines prescribed at a diabetic clinic in Ho Municipal Hospital, Volta Region, Ghana. **METHODS:** Cross sectional in design. A retrospective sampling procedure was used to collect data. 100 computer generated prescriptions were randomly selected from the computer data base for all OPD cases visiting the diabetic clinic in Ho Municipal Hospital between the periods of January 1 to December 31, 2011. With the aid of Excel and SPSS (vers 20), the data generated was analyzed and appropriate measures of cen-